

Circle whose Diameter is $\frac{R}{I} \times \frac{S \text{ cub.}}{D \text{ quad.}}$ very nearly, as I gather by computing the Errors of the Rays by the method of infinite Series, and rejecting the Terms whose quantities are inconsiderable. As for instance, if the Sine of Incidence I, be to the Sine of Refraction R, as 20 to 31, and if D the Diameter of the Sphere to which the Convex side of the Glass is ground, be 100 Feet or 1200 Inches, and S the Semidiameter of the aperture be two Inches, the Diameter of the little Circle (that is $\frac{R \times S \text{ cub.}}{I \times D \text{ quad.}}$) will be

$\frac{31 \times 8}{20 \times 1200 \times 1200}$ (or $\frac{31}{3600000}$) parts of an Inch. But the Diameter of the little Circle through which these Rays are scattered by unequal refrangibility, will be about the 55th part of the aperture of the Object-Glass which here is four Inches. And therefore the Error arising from the spherical Figure of the Glass, is to the Error arising from the different Refrangibility of the Rays, as $\frac{31}{3600000}$ to $\frac{4}{55}$ that is as 1 to 8151: and therefore being in Comparison so very little, deserves not to be considered.

But you will say, if the Errors caused by the different refrangibility be so very great, how comes it to pass that Objects appear through Telescopes so distinct as they do? I answer, 'tis because the erring Rays are not scattered uniformly over all that circular space, but collected infinitely more densely in the Center than in any other part of the Circle, and in the way from the Center to the Circumference grow continually rarer and rarer, so as at the Circumference to become infinitely rare; and by reason of their rarity are not strong enough to be visible, unless in the Center and very near it. Let ADE represent one of those Circles described with the Center C and Semidiameter AC, and let BFG be a smaller Circle concentric to the former, cutting with

Fig. 27.

with its Circumference AC in N, and by in any place B will and the whole Light to the whole Light the Square of ACa of AC. As if BC be four times denser in the less Circle, wither, as nine to two Light within the less strongly, than that between it and the C

But its further to the prismatick Colours affect the Senses more next to these in fire compared with the indigo and Violet are compared with the red. The Images of in the Focus of the confine of Green and which are in the middle where the Colour is the brightest Yellow Orange than to Green Rays (whose Sines are as 17 and 11) optical uses is to be Image of the Object Yellow and Orange meter is about the 2